

REMARKS

The Office Action dated June 15, 2007 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto.

Applicants are grateful for the acknowledgement that claims 18-23 are allowed. Claims 1, 2, 4-17, 24-27 are respectfully submitted for consideration.

The Office Action rejected claims 1-17 and 24-27 under 35 U.S.C. 103(a) as being obvious over US Patent No. 6,295,454 to Havinis et al. (Havinis), in view of US Patent No. 5,844,522 to Sheffer et al. (Sheffer). The Office Action took the position that Havinis disclosed all of the features of these claims except the determination of a base station estimate. The Office Action relied on Sheffer to disclose this feature. Applicants submit that the cited references taken individually or in combination, fail to disclose or suggest all of the features recited in any of the pending claims. Claim 3 is not pending in this application.

Claim 1, from which claims 2, 4-17, 24 and 25 depend, is directed to a method of estimating the location of a mobile device including, collecting location information. At least one of a plurality of different location methods is selected to provide a location estimate said methods comprising using cell identity information. A location estimate is determined based on the at least one selected location method. A virtual base station estimate is determined, dependent on the collected location information. A location estimate is provided based on at least one of the at least one selected location method estimate and the virtual base station estimate.

Claim 26 is directed to a system for estimating the location of a mobile device that includes a means for collecting location information. The system includes a means for selecting at least one of a plurality of different location methods to provide a location estimate said methods using cell identity information. The system further includes a means for determining a location estimate based on the at least one selected location method, and a means for determining a virtual base station estimate. The system further includes a means for providing a location estimate based on at least one of the at least one selected location method estimate, and the virtual base station estimate.

Claim 27 is directed to a system for estimating the location of a mobile device. A collecting unit is configured to collect location information. A selecting unit is configured to select at least one of a plurality of different location methods to provide a location estimate, said methods using cell identity information. A determining unit is configured to determine a location estimate based on the at least one selected location method and to determine a virtual base station estimate. A providing unit is configured to provide a location estimate based on at least one of the at least one selected location method estimate and the virtual base station estimate.

As discussed in previous correspondence, the present invention improves on the systems described in the prior art by generating a “virtual base station” from the determination of the estimate of the current serving cell using the signals received from neighboring cells and from this virtual base station estimate and the received signal values calculates a virtual base station location estimate in addition to the received

location estimate determined using the “real” serving cell and any neighboring cells which are available. Thus, the “virtual base station estimate,” as recited in the present claims, is distinguishable from “neighboring” base station estimate. For example, according to embodiments of the presently claimed invention, although a virtual base station estimate may be used to assist in providing a location estimate based on one of the at least one selected location method estimate and the virtual base station estimate, it does not have to receive signals from the “neighbouring base station” in order to perform the virtual base station estimate. Accordingly, Applicants submit that each of the pending claims recites features that are neither disclosed nor suggested in any of the cited references.

As discussed in previous correspondence, Havinis is directed to a telecommunications system and method where a mobile station is able to calculate its own position within a cellular network and reports the calculated location to the requester. The Office Action admitted that Havinis failed to disclose or suggest at least the feature of “determination of a virtual base station estimate,” and relied on Sheffer to disclose this feature.

Applicants respectfully submit that the cited references fail to disclose or suggest at least the feature of “determining a virtual base station estimate dependent on the collected location information, and providing a location estimate based on at least one of the at least one selected location method estimate and the virtual base station estimate”,

as recited in claim 1 and similarly recited in claims 26 and 27, because Sheffer fails to cure the admitted deficiencies of Havinis.

As discussed in previous correspondence, Sheffer is directed to a wireless network base location system where each antenna sight in the network includes an “agile vector sensor unit (AVS). Sheffer is in particular concerned with producing a location estimate where the mobile device is close to a handover position. Thus, Sheffer describes neighbouring cells that are used to assist in the determination of location estimation as the information from one cell may not be sufficient as the mobile station or device moves from this area. In which case, an agile vector sensor (AVS) which monitors the mobile device, can be added to a neighbour’s list.

However Applicants submit, as stated above, the use of real neighboring base station information is not a “virtual base station” as recited presently claimed invention. Thus, Sheffer fails to cure the admitted deficiencies of Havinis.

Furthermore, the method disclosed in Sheffer has the problem that in order to assist in the location estimate the collection of location information must include information from these neighbouring cells. If for example, there is no such information from these neighbouring cells, the use of the method as taught in Sheffer, is merely a system using information from the serving cell only. Thus, the problem associated with the combination of Havinis and Sheffer is one of producing accurate and flexible location estimates.

This problem is solved in the presently claimed invention by determining a virtual base station estimate dependent on the collection location information. This virtual base station is not a physical base station, or in fact a neighbouring physical base station estimate but a “simulated” neighbouring base station value (hence the term “virtual”). Thus, in embodiments of the invention, the location estimate of the mobile device can be improved by providing a location estimate based on at least one of the at least one selection method estimate and the virtual base station estimate. In other words, both the selected location method estimate with additional information is used to improve the location estimate.

To establish *prima facie* obviousness the prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicants’ disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In the present case, as discussed above, the cited references fail to disclose or suggest at least the feature of “determining a virtual base station estimate dependent on the collected location information, and providing a location estimate based on at least one of the at least one selected location method estimate and the virtual base station estimate”.

Furthermore, MPEP 2106 states “Office personnel must rely on the applicant’s disclosure to properly determine the meaning of the claims.” Markman v. Westview

Instruments, 52 F.3d 967,980, 34 USPQ2d 1321, 1330 (Fed. Cir.)(en banc), aff'd, U.S., 116 S. Ct. 1384 (1996). However, in the present rejection, the meaning of "virtual base station estimate" is being essentially ignored, because the Office Action's position makes the term "virtual" meaningless. This is completely inconsistent with the information contained in the Applicants' disclosure.

Applicants submit that because claims 2, 4-17, 24 and 25 depend from claim 1, these claims are allowable at least for the same reasons as claim 1, as well as for the additional features recited in these dependent claims.

Based at least on the above, Applicants respectfully submit that the cited references fail to disclose or suggest all of the features recited in claims 1, 2, 4-17, 24-27. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

Applicants respectfully submit that each of claims 1, 2, 4-17, and 24-27 is in condition for allowance, in addition to allowed claims 18-23. Accordingly, it is respectfully requested that each of claims 1, 2, and 4-27 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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